WE CLAIM:

1. A method of fabricating an inkjet printhead chip, the method comprising the steps of:

etching a drive circuitry layer that is positioned on a substrate to define regions for roof structures;

depositing a first layer of a thermally expandable material on the drive circuitry layer to cover said regions;

etching the first layer of thermally expandable material and the drive circuitry layer to define a deposition zone for heating circuit material at each region and contact vias for the heating circuit material;

forming at least one heating circuit at each region in electrical contact with the drive circuitry layer by means of the contact vias;

depositing a second layer of a thermally expandable material on the heating circuit material;

etching both layers of thermally expandable material to define a roof structure at each region such that each roof structure includes at least one actuator at each region and defines an ink ejection port, and such that each heating circuit is embedded in each respective actuator in a position such that heating of the expandable material by the heating circuit results in differential thermal expansion of the actuator and resultant displacement of each actuator; and

etching the substrate to define a plurality of nozzle chambers and corresponding ink inlet channels, such that each nozzle chamber and its associated ink inlet channel are positioned beneath each roof structure.

2. A method as claimed in claim 1, in which the steps of depositing the first and second layers of thermally expandable material comprise the steps of depositing first and second layers of polytetrafluoroethylene.

3. A method as claimed in claim 1, which includes the step of forming a plurality of heating circuits at each region and etching the layers of thermally expandable material so that each roof structure includes a plurality of actuators positioned about the ink ejection port, the layers being etched so that an arm is interposed between consecutive actuators and a rim that defines the ink ejection port is mounted on the arms.

4. A method as claimed in claim 1, which includes the step of crystallographically etching the substrate through the etched layers of the thermally expandable material to define the nozzle chambers.

5. A method as claimed in claim 1, in which the substrate is back-etched to define the ink inlet channels.

6. A method as claimed in claim 1, which includes the step of depositing and patterning a conductive material on the first layer of thermally expandable material using a lift-off process.

7. A method as claimed in claim 6, which includes the step of depositing and patterning one of the conductive materials selected from the group containing gold and copper.